



# 370HR

## High Performance Laminate and Prepreg

370HR is the industry's "best in class" lead-free compatible product for high-reliability applications across the telecommunications and high-end automotive markets.

370HR laminates and prepregs are made using a patented high performance 180°C Tg FR-4 multifunctional epoxy resin system that is designed for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required. We manufacture 370HR laminates and prepregs with a patented high performance resin and high quality E-glass glass fabric for superior Conductive Anodic Filament (CAF) resistance. This system provides superior thermal performance with low Coefficient of Thermal Expansion (CTE) and the mechanical, chemical and moisture resistance properties that equal or exceed the performance of traditional FR-4 materials.

370HR is used in thousands of PWB designs and has proven to be best in class for thermal reliability, CAF performance, ease of processing and proven performance on sequential lamination designs.

### Product Attributes

High Thermal Reliability , High Density Interconnect

### Typical Market Applications

Computing, Storage & Peripherals , Consumer Electronics , Networking & Communication Systems , Aerospace & Defense , Medical, Industrial & Instrumentation , Automotive & Transportation

#### ORDERING INFORMATION:

Contact your local sales representative or visit [www.isola-group.com](http://www.isola-group.com) for further information.

Isola Group  
3100 West Ray Road  
Suite 301  
Chandler, AZ 85226  
Phone: 480-893-6527  
Fax: 480-893-1409  
[info@isola-group.com](mailto:info@isola-group.com)

Isola Asia Pacific (Hong Kong) Ltd.  
Unit 3512 - 3522, 35/F  
No. 1 Hung To Road, Kwun Tong,  
Kowloon, Hong Kong  
Phone: 852-2418-1318  
Fax: 852-2418-1533  
[info.hkg@isola-group.com](mailto:info.hkg@isola-group.com)

Isola GmbH  
Isola Strasse 2  
D-52348 Düren,  
Germany  
Phone: 49-2421-8080  
Fax: 49-2421-808164  
[info-dur@isola-group.com](mailto:info-dur@isola-group.com)

## High Thermal Reliability

# Data Sheet

Tg 180°C

Td 340°C

Dk 4.04

Df 0.0210

IPC-4101 - /101 /98 /99 /126

UL - File Number E41625

Last Updated July 5, 2017  
Revision No: 64

### Product Features

- Industry Recognition
  - UL File Number: E41625
  - Qualified to UL's MCIL Program
  - RoHS Compliant
- Performance Attributes
  - CAF resistant
- Processing Advantages
  - FR-4 process compatible
  - UV blocking and AOI fluorescence

### Product Availability

- Standard Material Offering: Laminate
  - 2 to 125 mil (0.05 to 3.2 mm)
  - Available in full size sheet or panel form
- Copper Foil Type
  - HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weight
  - ½ to 2 oz (18 to 70 µm) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Roll or panel form
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass
  - Square weave glass
  - Mechanically spread glass

# 370HR Typical Values

Last Updated Jul 5, 2017

Property	Typical Value	Units	Test Method
		Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC	180	°C	2.4.25C
Decomposition Temperature (Td) by TGA @ 5% weight loss	340	°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	60 30	Minutes 2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	45 230 2.8	ppm/°C ppm/°C % 2.4.24C
X/Y-Axis CTE	Pre-Tg	13/14	ppm/°C 2.4.24C
Thermal Conductivity	—	W/mK	ASTM E1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass	Pass Visual 2.4.13.1
Dk, Permittivity	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	4.24 4.17 4.04 3.92 3.92	— 2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Df, Loss Tangent	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	0.0150 0.0161 0.0210 0.0250 0.0250	— — — 2.5.5.3 2.5.5.9 Bereskin Stripline 2.5.5.5 2.5.5.5
Volume Resistivity	A. After moisture resistance B. At elevated temperature	3.0 x 10 <sup>8</sup> 7.0 x 10 <sup>8</sup>	MΩ-cm 2.5.17.1
Surface Resistivity	A. After moisture resistance B. At elevated temperature	3.0 x 10 <sup>6</sup> 2.0 x 10 <sup>8</sup>	MΩ 2.5.17.1
Dielectric Breakdown	>50	kV	2.5.6B
Arc Resistance	115	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)	54 (1350)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)	3 (175-249)	Class (Volts)	UL 746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile copper foil all copper foil >17 μm [0.669 mil] B. Standard profile copper 1. After thermal stress 2. At 125°C (257°F) 3. After process solutions	1.14 (6.5) 1.25 (7.0) 1.25 (7.0) 1.14 (6.5)	N/mm (lb/inch) 2.4.8C 2.4.8.2A 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	90,000 77,000	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	55,900 35,620	ASTM D3039
Poisson's Ratio	A. Length direction B. Cross direction	0.177 0.171	— ASTM D3039
Moisture Absorption	0.15	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)	V-0	Rating	UL 94
Max Operating Temperature	130	°C	UL 796

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

[www.isola-group.com/products/all-printed-circuit-materials/market/automotive/](http://www.isola-group.com/products/all-printed-circuit-materials/market/automotive/)

The Isola name and logo are registered trademarks of Isola Corp. USA in the USA and other countries. 370HR is a registered trademark of Isola USA Corp. in the USA. All other trademarks mentioned herein are property of their respective owners.

© 2016, Isola Group, All rights reserved.

